

REMARKS

Claims 1-23 are pending and stand ready for further action on the merits.

Claim 1 has been amended to recite the subject matter of page 7, lines 17-20 of the specification.

Claims 5, 10 and 11 have been amended for clarity.

No new matter has been added by way of the amendment to the claims.

Telephone Interview dated January 27, 2005

It appears that the outstanding Office Action has been made without considering Applicants' Third Preliminary Amendment filed January 4, 2005. In the Third Preliminary Amendment, Applicants amended claim 21 and added new claim 23.

For clarification, Applicants' representative contacted Examiner Marcheschi on January 27, 2005 to find out how the Examiner prefers to handle this matter. During the telephone conversation with the Examiner, the Examiner indicated that Applicants should consider amended claim 21 and new claim 23 to be included in rejections A) and C) as defined below in the section titled "Prior Art-Based Rejections." Applicants have accepted the Examiner's

suggestion and have prepared this Reply under the assumption that claim 21 and new claim 23 are included in rejections A) and C).

Also, Applicants' representative queried the Examiner as to why certain references were applied against the claims. Details of this part of the discussion are given below in the section titled "Prior Art-Based Rejections."

Issues under 35 U.S.C. 112, 2nd paragraph

The Examiner rejects claims 5 and 10-11 under 35 U.S.C. 112, 2nd paragraph for being indefinite. Applicants respectfully traverse the rejection.

Specifically, the Examiner objects to claim 5 since the percentage range of +75% to -75% is not based upon a specific value. In response, Applicants have amended claim 5 to recite that "wherein essentially all of said particles have a size distribution between +75% and -75% of the average particle size."

The Examiner objects to claims 10 and 11 for not providing antecedent basis for the term "the complexing agent". In response, Applicants have amended claim 10 to recite the "abrasive composition according to claim 6, further comprising a ~~the~~ complexing agent which is at least one selected from the group consisting of polyamine, polyaminocarboxylic acid and an amino acid." Also, for

consistency, Applicants have amended claim 11 to depend from claim 10.

In view of the fact that the claims, as presently amended, particularly point out and distinctly claim the subject matter, which Applicants regard as the invention, withdrawal of the rejection is respectfully requested.

Prior Art-Based Rejections

The following prior art based rejections are pending:

- A)** Claims 1-4, 6-9, 12-14 and 16-23¹ are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Scott et al;
- B)** Claims 5, 10 and 11 are rejected under 35 U.S.C. 103(a) as obvious over Scott et al in view of Grunwald;
- C)** Claims 1, 2, 4 and 18-23 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Small et al;
- D)** Claims 3, 5-14 and 16-17 are rejected under 35 U.S.C. 103(a) as obvious over Small et al in view of Scott et al and Grunwald;
- E)** Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chapman; and
- F)** Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as obvious over Chapman.

Applicants respectfully traverse each of the rejections.

¹ During our telephone conversation with the Examiner on January 27, 2005, the Examiner indicated that we should consider amended claim 21 and new claim 23 to be included in rejections A) and C).

During the January 26, 2005 Interview, Applicants' representative queried the Examiner as to why the references to Scott et al., Small et al., and Chapman. were applied against the claims. The Examiner indicated that he was primarily searching for references teaching the use of "melamine".

Applicants respectfully submit that the presently claimed invention is neither anticipated nor rendered obvious over the cited references, since none of the cited references teach or fairly suggest a chemical mechanical planarization abrasive composition, which comprises non-polymeric organic particles as an abrasive material, and a solvent in the form of a slurry, wherein the non-polymeric organic particles inherently have an intermolecular hydrogen bonding property.

Scott et al.:

Scott et al. teach a litany of abrasive particles beginning at paragraph [0243] for a CMP slurry. However, each of these abrasive particles are either inorganic based or are polymeric organic particles. It is noted that the term "melamine" is used by Scott et al. in relation to melamine polymers, see paragraphs [0273], [0274] and [0278]. Scott et al. do not use the melamine in particles in the nonpolymeric form as presently claimed.

Accordingly, Scott et al. fail to teach or fairly suggest a chemical mechanical planarization abrasive composition, which

comprises non-polymeric organic particles as an abrasive material, and a solvent in the form of a slurry, wherein the non-polymeric organic particles inherently have an intermolecular hydrogen bonding property.

Grunwald:

At paragraph [0021], Grunwald teaches the use of organic nitro (-NO) compounds having limited solubility to be included in the CMP composition to contribute to the abrasion. The nitro (-NO) functionality of Grunwald's organic nitro compounds serves to oxidize the metal surface, and his choice of a low solubility compound with such a functionality is taught to contribute to abrasion.

In order to further distinguish the present invention from Grunwald, Applicants have amended claim 1 to recite that the non-polymeric organic particles inherently have an intermolecular hydrogen bonding property. In a nonlimiting embodiment (as recited in claim 4), the particles have amino (-NH₂) and/or amido (-NH-) functionalities, which serve a totally different purpose from the nitro (-NO) functionality of Grunwald's organic nitro compounds. They have inherent hydrogen bonding forces with the metal surface, providing for passivation and removal of any abraded metal particles. The end result is high metal removal rate at even low downward force and table rotation speed. These melamine materials

have extremely low water solubility by way of their heterocyclic structure. Therefore, this combination of very low water solubility and associative force with the metal surface make the melamine and related materials useful as abrasive particles for CMP.

Accordingly, Grumwald fails to teach or fairly suggest a chemical mechanical planarization abrasive composition, which comprises non-polymeric organic particles as an abrasive material, and a solvent in the form of a slurry, wherein the non-polymeric organic particles inherently have an intermolecular hydrogen bonding property.

Small et al.:

Small et al. teach in paragraph [0029] that the:

"abrasive particle may be a metal oxide particle, a resinous particle, or a plastic particle, and is preferably a plastic particle."

Accordingly, each of these abrasive particles are either **inorganic** based or are **polymeric** organic particles. It is noted that the term "melamine" is used by Small et al. in relation to melamine polymers, see paragraph [0030]. Small et al. do not use the melamine in particles in the nonpolymeric form as presently claimed.

Accordingly, Small et al. fail to teach or fairly suggest a chemical mechanical planarization abrasive composition, which comprises non-polymeric organic particles as an abrasive material, and a solvent in the form of a slurry, wherein the non-polymeric

organic particles inherently have an intermolecular hydrogen bonding property.

Chapman:

Chapman teach in column 3, lines 6-19:

"Suitable abrasives which can be utilized in the composition of the present invention include titanium dioxide, silica sand, calcium carbonate, calcium phosphate, zirconium silicate, diatomaceous earth, quartz, pumice, pumicite, whiting, perlite, tripoli, **melamine, urea formaldehyde resins**, ground rigid polymeric materials, such as polyurethane foam, feldspar, vermiculite, water absorbant soft abrasives, such as calcium silicate and aluminum silicate. Furthermore, mixtures of these abrasives can be utilized in the compositions so as to provide a balanced composition having both hard and soft abrasives. The preferred abrasives for use in the composition of the present invention are calcium carbonate, aluminum oxide, silica, calcium silicate and mixtures thereof." (Emphasis added).

In the highlighted portion given above, it would be clear to one skilled in the CMP art that Chapman is referring to melamine urea formaldehyde resins as the abrasive particle and not: 1) melamine particles; or 2) urea formaldehyde resin particles.

Accordingly, each of these abrasive particles are either inorganic based or are **polymeric** organic particles.

Chapman does not use the melamine in particles in the nonpolymeric form as presently claimed.

Accordingly, Chapman fails to teach or fairly suggest a chemical mechanical planarization abrasive composition, which comprises non-polymeric organic particles as an abrasive material,

and a solvent in the form of a slurry, wherein the non-polymeric organic particles inherently have an intermolecular hydrogen bonding property.

Conclusion:

As the MPEP directs, all the claim limitations must be taught or suggested by the prior art to establish a *prima facie* case of anticipation or obviousness. See MPEP §§ 2131 and 2143.03. In view of the fact that none of the cited references teach or fairly suggest a chemical mechanical planarization abrasive composition, which comprises non-polymeric organic particles as an abrasive material, and a solvent in the form of a slurry, wherein the non-polymeric organic particles inherently have an intermolecular hydrogen bonding property, a *prima facie* case of anticipation or obviousness cannot be said to exist. As such, withdrawal of the rejections A)-F) is respectfully requested.

Rejections Based Upon Li et al. which is assigned to Dynea
Canada, Ltd., U.S. 6,620,215 B2

The following rejections include the teachings of Li et al.:

- 1) Claims 1-14 and 16-22 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over all the claims of Li et al., alone or in view of Scott et al.;
- 2) Claims 1-4, 6-14 and 16-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Li et al.; and
- 3) Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al.

Applicants respectfully traverse each of the rejections.

Rejections 1)-3):

Li et al. invariably teach that the organic abrasive particles are resinous, see column 4, beginning at line 18. Accordingly, each of the abrasive particles are **polymeric** organic particles. It is noted that the term "melamine" is used by Li et al. in relation to melamine polymers, see e.g., column 4, lines 34-39. Li et al. do not use the melamine in particles in the nonpolymeric form, as presently claimed.

Accordingly, Li et al. fail to teach or fairly suggest a chemical mechanical planarization abrasive composition, which comprises non-polymeric organic particles as an abrasive material, and a solvent in the form of a slurry.

In Rejection 1), the Examiner includes Scott et al. in order to cure the deficiencies of Li et al. However, in view of the fact that Scott et al. also do not teach or fairly suggest non-polymeric organic particles as an abrasive material, Scott et al. fail to cure the deficiencies of Li et al.

As such withdrawal of Rejections 1)-3) is respectfully requested.

Rejection 3):

With regard to the rejection under 35 U.S.C. §103 based on 35 U.S.C. §102(e), according to MPEP § 706.02(l)(1), effective November 29, 1999, subject matter which was prior art under former 35 U.S.C. § 103 via 35 U.S.C. § 102(e) is now disqualified as prior art against the claimed invention if that subject matter and the claimed invention "were, at the time the invention was made" owned by the same person or subject to an obligation of assignment to the same person."

The Examiner will note that the present application is assigned to **Dyneal Chemicals Oy** of Finland whereas the patent to Li et al. is assigned to **Dyneal Canada Ltd.** Since **Dyneal Canada Ltd.** is a wholly owned subsidiary of **Dyneal Chemicals Oy** of Finland, it is respectfully submitted that **Dyneal Canada Ltd.** and **Dyneal Chemicals Oy** qualify as the "same person" under 35 USC 103(c), see MPEP 706(1)(2).

MPEP § 706.02(l) (2) instructs that an attorney or agent of record may make a statement to the effect that that application and the reference were, at the time the invention was made, owned by, or subject to an obligation of assignment to, the same person.

Statement Evidencing Common Ownership

The present application, and the U.S. Patent to Li et al. were, at the time the invention was made, owned by, or subject to an obligation of assignment to, the same person.

Consequences Of The Above-Statement

Accordingly, Applicant respectfully submits that the reference, Li et al., is not available as prior art under 35 U.S.C. § 102(e)/§ 103(c).

As such, withdrawal of Rejection 3) is respectfully requested.

Conclusion

In view of the above amendments and comments, Applicants respectfully submit that the claims are in condition for allowance. A Notice to such effect is earnestly solicited.

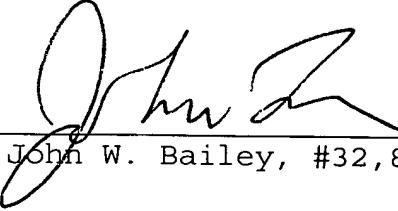
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact **Garth M. Dahlen, Ph.D., Esq.**, (Reg. No. 43,575) at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By


John W. Bailey, #32,881

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000


JWB/GMD/mua
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